

**ABSTRACT:**

Each detector element 44 in a solid state position sensitive detector (PSD) could provide a low charge efficiency per X-ray quantum; moreover, a comparatively high stray capacitance 104 could exist between the take-off electrode 90 and the semiconductor material 86, 88, 92 whereto it is connected. These effects will give rise to a low signal-to-noise ratio, thus degrading the signal. According to the invention, the analog charge amplifiers 58 are constructed in integrated bipolar technology and their read-out circuitry 48 is embodied in digital technology, preferably in a BICMOS process in the form of the Current Mode Logic (CML) technique. Moreover, the digital signal processing circuitry may be accommodated on the same substrate as the charge amplifiers.

Fig. 4